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Art Unit: 3664
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IN THE CLAIMS:

1. (Currently Amended) A steering device for vehicles including a steering shaft, the steering device comprising:

a sensor for determining the movement of said steering shaft, and a circuit for evaluating the measuring signals of the sensor;

coded microstructures ~~are provided~~ disposed on the steering shaft and/or on a device that is connected to the steering shaft in a non-positive manner; ~~, that a sensor is provided, which detects the microstructures and outputs associated measuring signals, and~~

said coded microstructures having a thickness of100 nm to 100 µm;

said sensor positioned for detecting the coded microstructures and outputting an associated measurement signal;

said circuit receiving the measurement signal and outputting an electronic signal representing a steering condition.

~~that an electronic circuit is provided, to which the measuring signals of the sensor are fed and which outputs electronic signals for steering.~~

2. (Original) The steering device of claim 1, wherein the microstructures form a succession of sequences arranged in an axial direction on the steering shaft and/or the device non-positively connected thereto.

3. (Original) The steering device of claim 2, wherein each sequence comprises multiple and/or single structures arranged spatially in an azimuthal and/or axial direction and containing individual or block-type coding.

4. (Original) The steering device of claim 2, wherein the sequences contain bit coding.

5. (Original) The steering device of claim 2, wherein a plurality of sequences are combined in a block, the blocks being distinguishable from each other by coding.

6. (Currently Amended) The steering device of claim 2, wherein the sequences arranged in an axial direction are present in redundant form, offset parallel more than once over the periphery of the steering shaft ~~(20)~~ and/or device.

7. (Original) The steering device of claim 1, wherein the microstructures are in complementary form.

8. (Original) The steering device of claim 1, wherein the smallest details of the microstructures have lateral dimensions of 5 nm to 5 mm.

9. (Original) The steering device of claim 8, wherein the smallest details of the microstructures have lateral dimensions of 1 µm to 1 mm.

10. Canceled

11. Canceled

12. (Original) The steering device of claim 1, wherein the microstructures have a level surface and are levelled by a planarizing method.

13. (Original)The steering device of claim 1, wherein the microstructures are built up from or covered with tribological hard-material layered systems.

14. (Original) The steering device of claim 13, wherein the hard-material layered systems are single films or multi-layer films of TiN and/or TiAlN and/or TiCN films and/or aluminium oxide films and/or amorphous diamantine hydrocarbon films with and without metal doping and/or amorphous CN films and/or cubic boron nitride films and/or diamond films.

15. (Original) The steering device of claim 1, wherein the sensors are arranged in the form of a line and/or array.

16. (Original) The steering device of claim 1, wherein the sensors are optical sensors.

17. (Original) The steering device of claim 16, wherein the sensors are optical fibreglass sensors.

18. (Original) The steering device of claim 17, wherein the sensors are fibre-optical double or multiple sensors.

19. (Original) The steering device of claim 16, wherein the microstructures are in the form of a reflection hologram.

20. (Original) The steering device of claim 1, wherein the sensors are magnetic sensors.

21. (Original) The steering device of claim 20, wherein the magnetic sensors are in a linear arrangement for reading a multi-bit code, particularly an 8-bit code.

22. (Original) The steering device of claim 20, wherein the sensor has a reading head with polar structures arranged on an arc matching the diameter of the steering shaft.

23. (Original) A method of making a steering device including a steering shaft, the method comprising the steps of:applying coded microstructures on the steering shaft or on a device non-positively connected to the shaft using thin film methods, and that structuring is effected by photo-lithographic methods;detecting the microstructures and outputting an associated measuring signal; and evaluating the measuring signal to determine appropriate action for steering control.

24. (Original) The method of claim 23, wherein the thin-film method is a PVD and/or CVD method.

25. (Original) The method of claim 23, wherein the microstructures are formed by a dry etching process and/or a wet-chemical etching process.

26. (Original) The method of claim 23, wherein the microstructures are produced by a laser beam process.

27. (Original) The method of claim 26, wherein the laser beam process used is a direct-writing laser ablation process and/or a laser-lithographic process and/or a direct-action mask-related laser-structuring process.

28. (New) A steering device for vehicles including a steering shaft, the steering device comprising:

a housing defining a fluid filled pressure chamber;

said steering shaft comprising a steering rack driven from a pinion;

said steering shaft extending through the pressure chamber and having respective ends thereof at opposed sides of the pressure chamber;

said pinion disposed outside of said pressure chamber adjacent one end thereof;

coded microstructures disposed on the steering shaft and/or on a device that is connected to the steering shaft;

a sensor for determining the movement of said steering shaft;

said sensor positioned for detecting the coded microstructures and outputting an associated measurement signal;

and a circuit for evaluating the measuring signal from the sensor;

said circuit receiving the measurement signal and outputting an electronic signal representing a steering condition.

29. (New) The steering device of claim 28, wherein said coded microstructures having a thickness of 100 nm to 100 μm.

30. (New) The steering device of claim 28 wherein the microstructures form a succession of sequences arranged in an axial direction on the steering shaft and/or the device non-positively connected thereto.

31. (New) The steering device of claim 28, wherein the sensors are one of optical sensors and magnetic sensors.

32. (New) The steering device of claim 28, wherein the microstructures are built up from or covered with a tribological hard-material layered system.

33. (New) The steering device of claim 28, wherein the coded microstructures are disposed at the other end of the steering shaft, and further including at least one mounting bore in the housing for receiving the sensor.

34. (New) The steering device of claim 33, including a pair of sensors and an associated pair of mounting bores for receiving respective sensors.

35. (New) The steering device of claim 28, wherein steering shaft has respective one and other ends, the pinion comprising a pinion gear disposed for engagement with the rack outside of the pressure chamber and adjacent the one end thereof, the sensor disposed in alignment with the coded microstructures and disposed adjacent the other end of the steering shaft.

36. (New) The steering device of claim 35, wherein the other end of the steering shaft extends beyond the pressure chamber, the coded microstructures extend along a length thereof that extends beyond the pressure chamber, and including seals and respective opposed locations where the rack extends beyond the housing.